In the Claims:

This listing of claims will replace all prior versions and listings of claims in this application.

1 (Currently amended). A method for monitoring cells in a microfluidic device, comprising:

feeding the cells into the microfluidic device through one or more microfluidic channels, wherein the device includes a chamber comprising a sensor, and wherein the maximum chamber volume is 1 μL; and

monitoring the cells under conditions such that attachment of the cells to the surface of the chamber is inhibited.

2 (Previously presented). The method according to claim 1, wherein the chamber surface comprises a gas-permeable material.

3 (Previously presented). The method according to claim 2, wherein the gas-permeable material is permeable to at least one gas selected from the group consisting of CO_2, NH_3, and O_2.

4 (Currently amended). The method according to claim 2, wherein the material is a ~~fluropolymer~~ fluoropolymer.

5 (Previously presented). The method according to claim 1, wherein the chamber surface comprises a hydrophilic material.

6 (Previously presented). The method according to claim 5, wherein the hydrophilic material is polyvinyl alcohol.

7 (Previously presented). The method according to claim 1, wherein the chamber is formed in an epoxy resin coated on a plastics substrate.

8 (Previously presented). The method according to claim 7, wherein the plastics substrate is polycarbonate.

9 (Previously presented). The method according to claim 1, wherein the chamber comprises a plurality of sensors.

10 (Previously presented). The method according to claim 1, wherein the sensor is sensitive to oxygen, carbon dioxide, ammonium ion or pH.

11 (Previously presented). The method according to claim 1, wherein the sensor is an optical sensor.

12 (Previously presented). The method according to claim 11, wherein the sensor is a holographic sensor.

13 (Previously presented). The method according to claim 1, wherein the sensor is an electrochemical or acoustic sensor.

14 (Previously presented). The method according to claim 1, wherein the sensor is sensitive to a reactant or product of fermentation.

15 (Currently amended). The method according to claim 1, wherein the volume of the chamber is from 50 nL to [[10]] 1 μL.

16 (Previously presented). The method according to claim 1, which further comprises introducing growth medium into the chamber, wherein the sensor is sensitive to a reactant or product of cell growth.

17 (Previously presented). The method according to claim 16, wherein the growth medium comprises a non-metabolisable mannose analogue.

18 (Previously presented). The method according to claim 17, wherein the analogue is methyl α-D-mannopyranoside.

19 (Previously presented). The method according to claim 1, which further comprises introducing a component of, or derived from, the cells into a second microfluidic chamber comprising a sensor and in connection with the first chamber detecting said component.

20 (Previously presented). The method according to claim 19, wherein the component is a product of cell growth.

21 (Previously presented). The method according to claim 19, wherein the component is an expressed protein or enzyme.

22 (Cancelled).

23 (Withdrawn). A microfluidic device which comprises a chamber including a sensor and inlets for a sample and for a growth medium, wherein the chamber surface is such that, in use, attachment of cells thereto is inhibited.

24 (Withdrawn). The device according to claim 23, wherein the chamber surface comprises a gas-permeable material.

25 (Withdrawn). The device according to claim 23, which comprises a plurality of the chambers.

26 (Withdrawn). The device according to claim 25, wherein the chambers are in the form of an array.

27 (Withdrawn). The device according to claim 25, wherein a pair of chambers is connected by a channel.

28 (Withdrawn and currently amended). The device, according to claim 23, wherein the material is a ~~fluropolymer~~ fluoropolymer.

29 (Withdrawn). The device, according to claim 23, wherein the chamber surface comprises a hydrophilic material.

30 (Withdrawn). The device, according to claim 23, wherein the chamber is formed in an epoxy resin coated on a plastic substrate.

31 (Withdrawn). The device, according to claim 23, wherein the sensor is sensitive to oxygen, carbon dioxide, ammonium ion or pH.

32 (Withdrawn). The device, according to claim 23, wherein the sensor is an optical sensor.

33 (Withdrawn). The device, according to claim 23, wherein the sensor is a holographic sensor.

34 (Withdrawn). The device, according to claim 23, wherein the sensor is an electrochemical or acoustic sensor.

35 (Withdrawn). The device, according to claim 23, wherein the sensor is sensitive to a reactant or product of fermentation.